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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KAUSHAL, SUMESH	
ART UNIT	**PAPER NUMBER**
1636	

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/987,763	CRAFTON ET AL.	
	Examiner	Art Unit	
	Sumesh Kaushal Ph.D.	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-73* is/are pending in the application.

4a) Of the above claim(s) *39-73* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response filed on 06/18/04 has been acknowledged.

Claims 1-73 are pending.
Claims 1-38 are examined in this office action.

Applicants are required to follow Amendment Practice under revised 37 CFR §1.121. The fax phone numbers for the organization where this application or proceeding is assigned is ***703-872-9306****.*

Election/Restrictions

Applicant's election without traverse of Group IV claims 1-38 (*wherein the elected subject mater is nucleotides sequences of* ***SEQ ID NO: 7*** *and* ***dihydrodipicolinate reductase***) in the reply filed on 06/18/04 is acknowledged.

Claims 39-73 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 06/18/04.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-38 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific asserted utility or a well-established utility.

The instant claims are drawn to an isolated DNA sequence (SEQ ID NO:7) or any variant thereof that is capable of regulating the transcription of a gene or interest.

The specification asserts that the nucleic acid sequence of SEQ ID NO:7 is a putative gene identified by sequence homology that is responsive to putative regulatory molecule like pyruvate (Spec. page 23 table-1A). However the specification as filed fails to disclose that nucleic acid sequences of SEQ ID NO:7 is a regulatory sequence that regulates transcription of a gene of interest in general or in response to pyruvate.

The instant invention is not considered to have a specific and/or substantial utility, since the instant specification fails to establish that that the disclosed polynucleotide sequence (SE ID NO:7) is a transcription regulatory element explicitly or implicitly as putatively considered by the instant specification. The asserted transcription activity is mere computer-generated hypotheses, since no biological function has been established. The specification fails to disclose a functional assay that would enable one skill in the art how to evaluate the biological activity of the regulatory element encoded by SEQ ID NO:7. In addition the specification fails to establish any nexus between pyruvate metabolism and a regulatory element encoded by SEQ ID NO:7. Considering the applicant's disclosure, it is unclear whether pyruvate would up-regulate or down-regulate the transcription a gene operatively linked to the nucleic acid sequences of SEQ ID NO:7. The official sequence search using the disclosed nucleic acid sequences fails to provide any evidence that the polynucleotides of SEQ ID NO:7 is transcriptional regulatory element that is responsive to pyruvate.

In addition, the scope of invention as claimed encompasses any and all variants of nucleotide sequence of SEQ ID NO:7 that encodes any or a pyruvate responsive transcriptional element. The variations as claimed encompasses conserved motifs that are considered germane to the pyruvate responsive transcriptional activity. It is general knowledge in the art that even conservative nucleotide substitutions can adversely affect the transcriptional site and corresponding biological activity if nucleic acids sequences that are critical for such functions are substituted, added or deleted. see Ngo, in The Protein Folding Problem and Tertiary Structure Prediction, Merz et al. (eds.), Birkhauser Boston: Boston, MA, pp. 433 and 492-495, 1994). Rudinger (in

Peptide Hormones, Parsons (ed.), University Park Press: Baltimore, MD, pp. 1-7, 1976). The specification even fails to define what comprises the minimal structure or consensus core structure that defines the functional domain of the regulatory element present in the nucleic acid sequences of SEQ ID NO:7. In view of the foregoing, one skilled in the art would not readily attribute that the nucleic acid sequence or any variant thereof as claimed is a pyruvate responsive transcriptional element. Therefore, the asserted use for the claimed invention is not supported by either a specific and/or substantial utility, since no function can be ascribed to the nucleic acid sequence as claimed. The only immediate apparent utility for the instant invention would be further scientific characterization of the claimed nucleic acid sequences a putative pyruvate responsive transcriptional element.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-38 are rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Nature Of Invention:

Invention relates to a DNA sequence that regulates transcription of a gene operatively linked to the DNA sequence

Breadth Of Claims And Guidance Provided By The Inventor:

The instant claims are drawn to an isolated DNA sequence (SEQ ID NO:7) or any variant thereof that is capable of regulating the transcription of a gene or interest. In

addition the claims are further drawn to expression vector and host cells comprising the claimed nucleic acid sequence or any variant thereof.

The specification asserts that the nucleic acid sequence of SEQ ID NO:7 is a putative gene identified by sequence homology that is responsive to putative regulatory molecule like pyruvate (Spec. page 23 table-1A). However the specification as filed fails to disclose that nucleic acid sequences of SEQ ID NO:7 is a regulatory sequence that regulates transcription of a gene of interest in general or in response to pyruvate.

The instant specification fails to establish that that the disclosed polynucleotide sequences (SE ID NO:7) is a transcription regulatory element explicitly or implicitly as putatively considered by the instant specification. The asserted transcription activity is mere hypotheses base upon sequence comparison, since no biological function has been established. The specification fails to disclose any functional assay that would enable one skill in the art how to evaluate the biological activity of the regulatory element encoded by SEQ ID NO:7. In addition the specification fails to establish any nexus between pyruvate metabolism and the regulatory element encoded by SEQ ID NO:7. Considering the applicant's disclosure it is unclear whether pyruvate would up-regulate or down-regulate the transcription a gene operatively linked to the nucleic acid sequences of SEQ ID NO:7. The official sequence search using the disclosed nucleic acid sequences fails to provide any evidence that the polynucleotides of SEQ ID NO:7 is transcriptional regulatory element that is responsive to pyruvate.

In addition, the scope of invention as claimed encompasses any and all variants of nucleotide sequences that encode a pyruvate responsive transcriptional element. The variations as claimed encompasses the conserved motifs that are germane to the pyruvate responsive transcriptional activity. It is general knowledge in the art that even conservative nucleotide substitutions can adversely affect the transcriptional site and corresponding biological activity if nucleic acids sequences that are critical for such functions are substituted, added or deleted *(supra).* Furthermore making and testing a point mutation is significantly different from the making and testing nucleic acid sequences wherein unknown number of nucleotides are added, deleted and/or substituted. The number of possible scenario increase geometrically with increase in

percent non-identity. Such making and testing is nothing more than an invitation to further experimentation, since the specification can not be relied on to teach how to make the variants as claimed. In the instant case the specification even fails to disclose a functional assay that would enable one skill in the art how to evaluate the biological activity of the regulatory element encoded by SEQ ID NO:7. One has to engage in extensive making and testing in order to obtain variants that meet the requirements for the proposed transcriptional and/or functional activity. In addition determining biological activity of a transcriptional elements base upon sequence similarity alone is not considered routine in the art and without sufficient guidance to a specific transcriptional motif and a functional assay experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). It is noted that the unpredictability of a particular area may alone provide reasonable doubt as to the accuracy of the broad statement made in support of enablement of claims. See Ex parte Singh, 17 USPQ2d 1714 (BPAI 1991). Therefore, one skill in the art would have to engage in excessive and undue amount of experimentation to practice the invention as claimed. The quantity of experimentation required would include the functional characterization of polynucleotides of SEQ ID NO: 7 as a transcriptional regulatory element that is responsive pyruvate.

Claims 1-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The scope of invention as claimed encompasses any and all variants of SEQ ID NO:7, wherein the variant comprises a nucleic acid sequence which is 90% identical to SEQ ID NO:7 or a nucleic acid sequence that hybridizes SEQ ID NO:7.

At best the specification discloses only SEQ ID NO:7 but fails to disclose any variant of SEQ ID NO:7 that is capable of regulating the transcription of a gene of

interest especially in the presence pyruvate. The scope of invention as claimed encompasses substitution, addition and/or deletion of lat least 10% of nucleic acid sequences in the nucleic acid of SSEQ ID NO:7. The specification fails to disclose any variant of SEQ ID NO:7 explicitly or implicitly that is capable of regulating the transcription of a gene of interest. The specification even fails to establish that nucleic acid sequence of SEQ ID NO:7 is a transcriptional element which is capable of regulating the expression of a gene in native or in an isolated form. The specification fails to disclose any functional assay that would enable one skill in the art how to evaluate the biological activity of the regulatory element encoded by SEQ ID NO:7. In addition the specification fails to define the minimal structure or consensus core structure that defines the functional domain of the regulatory element present in the nucleic acid sequences of SEQ ID NO:7.

Applicant is referred to the guidelines for ***Written Description Requirement*** published January 5, 2001 in the Federal Register, Vol.66, No.4, pp.1099-1110 (see http://www.uspto.gov). The disclosure of a single species is rarely, if ever, sufficient to describe a broad genus, particularly when the specification fails to describe the features of that genus, even in passing. (see In re Shokal 113USPQ283(CCPA1957); Purdue Pharma L. P. vs Faulding Inc. 56 USPQ2nd 1481 (CAFC 2000). In the instant case the specification only teaches nucleic acid sequence of SEQ ID NO:7 but fails to disclose any variant of SEQ ID NO:7 that has similar functional activity explicitly or implicitly as putatively claimed herein.

The possession may be shown by actual reduction to practice, clear depiction of the invention in a detailed drawing, or by describing the invention with *sufficient relevant identifying characteristics* (as it relates to the claimed invention as a whole) such that a person skilled in the art would recognize that the inventor had possession of the claimed invention. *See, e.g., Pfaff v. WellsElectronics, Inc., 525 U.S. 55, 68, 119 S.Ct. 304, 312, 48 USPQ2d 1641, 1647 (1998); Eli Lilly, 119 F.3d at 1568, 43 USPQ2d at 1406; Amgen, Inc. v. Chugai Pharmaceutical, 927 F.2d 1200, 1206, 18 USPQ2d 1016, 1021 (Fed. Cir. 1991).* In claims to genetic material, generic statement such as "vertebrate insulin cDNA" or mammalian insulin cDNA," without more, is not adequate written

description of claimed genus, since it does not distinguish genus from others except by function, and does not specifically define any of genes that fall within its definition, or describe structural features commonly possessed by members of genus that distinguish them from others; accordingly, naming type of material generally known to exist, in absence of knowledge as to what that material consists of, is not description of that material (*Eli Lilly, 119 F.3d at 1568, 43 USPQ2d at 1406).*

In the instant case the nucleic acid variants (as claimed) has been defined only by a statement of function that broadly encompasses regulation of transcriptional activity, which conveyed no distinguishing information about the identity of the claimed DNA sequence, such as its relevant structural or physical characteristics. The variation as claimed also encompasses the conserved motifs, which are considered germane to the proposed functional activity. In addition the specification fails to define the minimal structure or consensus core structure that defines the functional domain of the regulatory element present in the nucleic acid sequences of SEQ ID NO:7. According to these facts, one skill in the art would conclude that applicant was not in the possession of the claimed genus because a description of only one member of this genus is not representative of the variants of genus and is insufficient to support the claim.

Claims 20-21, 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20, 24, 25 and 26 recites the limitation "said first nucleic acid". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Vyostskaia et al. Acc. No:AC000132, 1997.

The invention as claimed is drawn to a polynucleotide sequence comprising a sequence which comprises 10 or 20 contiguous nucleotides of a SEQ ID NO:7.

Vyostskaia teaches an isolated polynucleotide sequence comprising a sequence comprising 23 contiguous nucleotides of a SEQ ID NO:7. Thus the cited art clearly anticipate the invention as claimed.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sumesh Kaushal Ph.D. whose telephone number is 571-272-0769. The examiner can normally be reached on Mon-Fri. from 9AM-5PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yucel Irem Ph.D. can be reached on 571-272-0781.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to ***(571) 272-0547.***

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now

contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306.**

Sumesh Kaushal
Examiner GAU 1636

JAMES KETTER
PRIMARY EXAMINER